

REMARKS/ARGUMENTS**Status of the Application**

Prior to the entry of this amendment, claims 1-30 were pending in this application. In the Office Action claims 19 and 20 were rejected under 35 USC 112, and all claims were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hahn et al (2003/0026167) in view of Doremus (EP 685,628).

The present amendment amends claims 1, 3, 5, 9, 13, 16, 19-21, 25, 26 and 28. Claims 15 and 24 are cancelled and new claims 31-36 are added. Therefore, claims 1-14, 16-23, and 25-36 are presented for further examination.

Nature of the amendments

The independent claims 1, 16, 19 and 21 now require that the acoustic channel is a column of low-loss acoustic liquid. This amendment is supported by page 3 lines 13 to 15 and by page 5 lines 16 to 20. (Such liquid may have a viscosity in accordance with claims 9 and 28). Consequential amendments are made in dependent claims and some minor errors have been put right.

New claim 31 is dependant on claim 8 and specifies that the downhole installation referred to in claim 8 comprises a valve. Explicit disclosure of this possibility can be found at page 11 line 27 and page 12 line 24 referring to item 220 in Fig 2.

New independent claim 32 is an independent claim containing the features of claim 1 as filed, together with features from claim 8 and the feature of new claim 31 that the downhole installation comprises a valve.

New claims 33 and 34 are method sub-claims based on claim 9.

New claim 35 is dependent on claim 19. It specifies that the operations mentioned in claim 19 comprise delivery of fluid which enters the formation. Explicit basis for

this limitation is found at column 10 lines 2 to 4 which mentions fluid flowing out through perforations 101 in Fig 1A.

New independent claim 36 is somewhat related. It begins by specifying a process in which fluid flows out to the formation, as mentioned in new claim 35, and then follows this with wording copied from claim 16.

No new matter is added by the amendments. Applicants respectfully request reconsideration of this application as amended.

Rejections under 35 USC §112

These were clerical/typing errors and have been rectified. Other points of wording in the claims have also been dealt with.

Rejections under 35 U.S.C. §103

In the Office Action Hahn et al was relied on as disclosing the general concept of acoustic telemetry to communicate within a wellbore. It was noted that Hahn suggests, rather than explicitly discloses digital transmission. No admission is made, but it is not necessary at this stage to discuss Hahn further.

The office action accepted that Hahn et al does not teach a communication channel within the size requirement of claim 1 and relied on Doremus to teach this. Doremus is concerned with the use of coiled tubing and a whipstock to initiate the drilling of a new wellbore branching from an existing bore. The relevant portion of Doremus appears to be column 4 on page 3 of EP 685,628 A1 where lines 21 to 23 refer to an MWD tool 32 transmitting signals as pressure pulses in the circulating drilling mud.

Independent claims 1, 16, 19 and 21 now specify the nature of the liquid column. A low loss acoustic fluid is required and Doremus does not disclose this.

Applicants contend that, without hindsight knowledge of the invention there would be no reason to use a different fluid in Doremus. Indeed there is a strong incentive against altering Doremus.

The present inventors have recognized that the power required for acoustic telemetry can be reduced by using a separate channel within the wellbore to carry the acoustic signal and providing a low-loss acoustic fluid in this channel. This approach and its benefit are not present in the prior documents and so there is not teaching or suggestion to replace the drilling mud used by Doremus with anything else.

Moreover, such replacement would be seen as harmful. Doremus is concerned with drilling. Drilling mud is used for the well known purposes of cooling the drill bit and carrying away the cuttings. Drilling muds are formulated to do this and (absent knowledge of the invention) it would be contrary to the objectives of Doremus to replace the drilling mud with some other fluid which was not a drilling mud and which would not do the job for which drilling mud is required.

It is requested that the rejections of claims 1, 16, 19, and 21, along with the claims dependent on them, are withdrawn.

Dependent claim 8 requires a hydraulic control line leading to a permanent downhole installation. Doremus has no permanent downhole installation and no control line leading to one. Since the objective in Doremus is the drilling of a new wellbore, the machinery to drill it is present only temporarily and is removed when it is drilled the bore. Claim 31 reinforces this distinction by specifying an installed valve, which is not shown in Doremus. New claim 32 is likewise distinguished from the cited documents by this feature.

New claims 35 and 36 distinguish from Doremus by requiring fluid to be sent out into the formation to stimulate or improve the well. This contrasts with drilling where fluid is merely circulated as part of the process of creating the borehole and not for improving production from it.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

In the event that a fee or refund is due in connection with this Amendment, the Commissioner is hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No 19-0615. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned.

Respectfully submitted,

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